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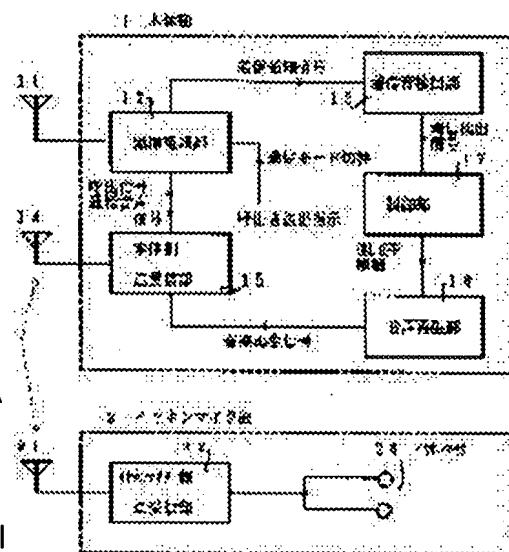
(54) PORTABLE TELEPHONE SET WITH WIRELESS EARPHONE

(57)Abstract:

PROBLEM TO BE SOLVED: To allow the telephone set to make hand-free speech without the need for manual operation.

SOLUTION: A main body section 1 integrally having an audio reproduction section 16 and a portable telephone section (radio telephone set section 12 and an incoming call tone detection section 13) and an earphone microphone section 2 are connected in a radio channel by transmission reception sections 15, 22 respectively. A phone call is awaited while using an earphone microphone 23 to hear a music reproduced by the audio reproduction section 16 and when a call comes, a control section 17 stops reproduction of the music and allows the earphone microphone section 2 to ring a call tone.

Since the speech mode is automatically selected, the user takes part in the speech without manual operation. Furthermore, an bone conduction type earphone microphone is employed for the earphone microphone, the speed with hand-free state is attained.



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CLAIMS

[Claim(s)]

[Claim 1] The portable telephone with a wireless earphone characterized by to constitute so that the sound signal which consisted of the body section which has the audio playback section and the radiotelephony sections, such as a cassette tape regenerator, in one, and the earphone microphone section by which wireless connection was made with this body section, and changed into voice the sound signal reproduced or received in said body section in said earphone microphone section, and was generated in the earphone microphone section may transmit from said body section.

[Claim 2] The body section is the portable telephone with a wireless earphone of claim 1 which performs the waiting receptacle of a telephone, stops playback of audio voice when there is arrival of the mail, and transmits a ringing-tone signal to the earphone microphone section while transmitting the sound signal reproduced during playback of audio voice to the earphone microphone section.

[Claim 3] The body section is the portable telephone with a wireless earphone of claim 2 which switches the body section to talk mode after transmitting the ringing-tone signal of the set-up count.

[Claim 4] The radiotelephony section by which the body section is connected with a mobile radio telephone system through a wireless circuit, The arrival-of-the-mail detecting element which inputs the advice signal of arrival of the mail, and outputs an arrival-of-the-mail detecting signal when said radiotelephony section has arrival of the mail, The voice playback section which reproduces audio voice and outputs this voice regenerative signal to the 1st transceiver section, When arrival of the mail is during playback actuation of said voice playback section, input said arrival-of-the-mail detecting signal, and OFF control of said voice playback section is performed. And the control section controlled to direct to sound ringing tone to said radiotelephony section, to change said radiotelephony section to talk mode after the ringing tone of the count set up beforehand sounds, and to be able to start a call automatically, It has the 1st transceiver section which inputs the call signal from said radiotelephony section, a call sound signal, or the regenerative signal from said voice playback section. In the earphone microphone section The portable telephone with a wireless earphone of claim 3 equipped with an earphone, the earphone microphone with which the bone conduction mold microphone was united, and the 2nd transceiver section which is connected to this earphone microphone and radiocommunicates with said 1st transceiver section.

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DETAILED DESCRIPTION

[Detailed Description of the Invention]

[0001]

[Field of the Invention] About a portable telephone, while especially this invention unifies an audio regenerator and a portable telephone, it relates to the portable telephone which made wireless connection of the earphone microphone.

[0002]

[Description of the Prior Art] As for the call to the portable telephone at the time of having taken the electric car, the bus, etc., ringing tone becomes trouble of the surrounding PAX in many cases. For this reason, the portable telephone which enabled it to hear ringing tone with a headphone stereo cassette tape recorder by unifying the headphone stereo cassette tape recorder which is an audio regenerator, and a portable telephone is proposed. As this kind of a thing, the thing of a publication is in JP,5-6958,U. This portable telephone could connect the earphone to either the headphone stereo cassette tape recorder section or the telephone section by operating a circuit changing switch manually, and when it connected with the telephone section, another side was used for it as an earphone, using one earphone as a telephone transmitter. By such telephone, there was an advantage of not failing to hear ringing tone, by giving priority to the ringing tone of a telephone over the playback sound of headphone. The portable telephone of a publication is also in JP,4-243358,A as the same thing as this and abbreviation.

[0003]

[Problem(s) to be Solved by the Invention] However, there are the three following problems in the portable telephone of this proposed technique. Since it is necessary to change from headphone stereo cassette tape recorder mode to telephone mode by manual operation at the time of arrival of the mail, when it has loading, or when the portable telephone is being put into the handbag etc., smooth call-in actuation becomes impossible to the 1st. Since a telephone transmitter and another side were used for the 2nd for one side of an earphone as an earphone in order to talk over the telephone, since it has an earphone, one hand must be used, and a call becomes difficult at the time of the situation which a hand cannot use freely like the above. Since the portable telephone and the earphone are tied [3rd] by the wire, when a portable telephone is put into a bag etc., a bag cannot be detached more than the die length of an earphone code, and a bag cannot be put on a rack etc. Such a problem especially is remarkable in the train [crowded], and has been a failure at the time of raising the utilization effectiveness of a portable telephone.

[0004] The object of this invention has manual operation in offering unnecessarily the portable telephone with a wireless earphone in which the call in handsfree is possible and the activity which moreover separates from a portable telephone is possible.

[0005]

➤ [Means for Solving the Problem] The portable telephone of this invention is characterized by to constitute so that the sound signal which consists of the body section which has the audio playback section and the radiotelephony section in one, and the earphone microphone section by which wireless connection was made with this body section, and changed into voice the sound signal (voice electrical

signal) reproduced or received in the body section in the earphone microphone section, and was generated in the earphone microphone section may transmit from the body section. The waiting receptacle of a telephone is performed especially during playback of audio voice, when there is arrival of the mail, it stops playback of audio voice, and the body section constitutes it so that the sound signal of ringing tone may be transmitted to the earphone microphone section, while transmitting the reproduced sound signal to the earphone microphone section. Moreover, after transmitting ringing tone of the set-up count, the body section is constituted so that the body section may be switched to talk mode.

[0006]

[Embodiment of the Invention] Next, the operation gestalt of this invention is explained with reference to a drawing. Drawing 1 is the external view of the operation gestalt which united the portable telephone with a wireless earphone of this invention with the portable cassette tape regenerator, and drawing 2 is the block circuit diagram. The body section 1 in which this portable telephone has a music regenerative function and a radiotelephony function, and the earphone microphone section 2 are constituted by another object, and both are connected by wireless. Namely, the radiotelephony section 12 by which the body section 1 is connected to the mobile radio telephone system outside drawing through a wireless circuit through an antenna 11, While delivering and receiving a call sound signal between the ringer tone detecting element 13 which detects the ringer tone which received in this radiotelephony section 12, and said radiotelephony section 12 It has the body side transceiver section 15 by which wireless connection is made with the earphone side transceiver section 22 which said earphone microphone section 2 mentions later through an antenna 14, the voice playback section 16 which reproduces voice, such as music, from a cassette tape, and the control section 17 which controls these each part.

[0007] That is, said radiotelephony section 12 outputs the advice signal of arrival of the mail to the ringer tone detecting element 13, when a message is received, and the ringer tone detecting element 13 outputs an arrival-of-the-mail detecting signal to a control section 17. It points to a control section 17 so that a call signal may be sent out to the radiotelephony section 12 at the same time it inputs the arrival-of-the-mail detecting signal from the ringer tone detecting element 13 and performs OFF control of the voice playback section 16, after the ringing tone of the count set up beforehand sounds, it is changed to talk mode, it points to it so that a call sound signal may be outputted, and it controls so that a call begins automatically. After a call finishes, talk mode is canceled and ON control of the voice playback section 16 is performed. Moreover, the voice playback section 16 plays music etc. from a cassette tape in addition to the time of talk mode, and outputs it to the body side transceiver section 15 as a music regenerative signal. The body side transceiver section 15 receives the call signal from the radiotelephony section 12, a call sound signal, or the playback sound signal from the voice playback section 16, and radiocommunicates with the transceiver section 22 of the earphone microphone section 2.

[0008] On the other hand, the earphone microphone section 2 inputs the electrical signal from the earphone side transceiver section 22 by which wireless connection is made through said body side transceiver section 15 and antenna 21, and this earphone side transceiver section 22, changes it into voice, and consists of earphone microphones 23 which have the bone-conduction mold microphone function which changes into a sound signal the voice inputted on the other hand, and is outputted to said transceiver section 22. In addition, if voice is taken out with the condition of having set to the lug, that voice oscillation can conduct the earphone microphone 23 of this bone conduction mold microphone function through human being's bone, and it can change voice into a sound signal.

[0009] Next, actuation of the portable telephone with a wireless earphone of the above configuration is explained. When the user of a portable telephone awaits and does a cellular phone in the electric car which was crowded at the time of commutation attending school etc., he drives the voice playback section 16 as a headphone stereo cassette tape recorder, and should just be listening to the music of a cassette tape. If arrival of the mail is during music playback of this voice playback section 16 at the radiotelephony section 12, the ringer tone detecting element 13 will input the advice signal of arrival of the mail of the radiotelephony section 12, and will output an arrival-of-the-mail detecting signal. A control section 17 carries out OFF control of the voice playback section 16 which inputted said arrival-

of-the-mail detecting signal, and stops the output of a music regenerative signal. It directs to output a call signal to it and coincidence to the radiotelephony section 12. This call signal is transmitted to the antenna 21 of the earphone microphone section 2, and the earphone microphone side transceiver section 22 on radio through an antenna 14 from the body side transceiver section 15, and is outputted from the earphone microphone 23 as voice. By this, the music which was being listened to will be interrupted and a user will hear ringing tone from immediately after [the].

[0010] And if the ringing tone of the count set up beforehand sounds, a control section 17 will count the count and will change the radiotelephony section 12 to talk mode automatically. Thereby, the body side transceiver section 15 which the radiotelephony section 12 and the body side transceiver section 15 changed into the condition which can output and input a call signal, therefore had sent and received the sound signal of the voice playback section till then, and the earphone side transceiver section 22 will be in the condition of sending and receiving the call signal in the radiotelephony section 12 shortly. It will be [the call sound signal received in the radiotelephony section 12 being transmitted to the earphone microphone side transceiver section 22 on radio from the body side transceiver section 12 by this, and hearing it as voice with the earphone microphone 23, or] in a possible condition. Therefore, if a user hears a call partner's voice with the earphone microphone 23 and answers with voice as it is, the bone conduction of him will be carried out [voice / this], he will be inputted into the earphone side transceiver section 22 from the earphone microphone 23, will be further transmitted to the body side transceiver section 15 on radio from here, and will be further transmitted to the other party through the radiotelephony section 12. Thereby, a call becomes possible.

[0011] And when the other party's electric-field condition is detected, for example in the radiotelephony section 12 and this falls even to the level below fixed, or when it detects that the voice which should transmit from the body side transceiver section 15 between fixed time amount is not inputted, this is outputted to a control section 17. A control section 17 judges with in response a call being completed, cancels the talk mode of the radiotelephony section 12, and carries out ON control of the voice playback section 16 at this and coincidence. Thereby, it is ended, a call continues playback of the music in the cassette tape in the voice playback section 16 again, and a user becomes possible [listening to music in the same condition as call before].

[0012] Thus, in this portable telephone, if a control section 17 receives an arrival-of-the-mail detecting signal, music playback will be suspended, and since it changes to talk mode after the ringing tone of the count set up beforehand sounds, a user can start a call automatically, without performing manual operation in any way. Moreover, the call in handsfree is attained by constituting a microphone from an earphone microphone of a bone conduction mold. Therefore, a user becomes possible [awaiting, and sometimes listening to music and talking over the telephone by answering a call also in the location which cannot take movement of a crowded electric car etc.]. Moreover, it does not become others' trouble, without ringing tone being heard by others since ringing tone can be caught only by a user's earphone in this case.

[0013] Moreover, since wireless connection of a call signal, a call sound signal, and the music regenerative signal is made in the body side transceiver section 15 and the earphone microphone side transceiver section 22, even when the body section 1 has contained in the bag of network shelving which a user's hand does not reach, and the bag which is hard to take out immediately, it becomes possible to use as a portable telephone. This can be said to be not putting the body section 1 on the place which a user's hand always reaches, and it becomes possible to raise the user-friendliness of a portable telephone of it more.

[0014] In addition, with said operation gestalt, although the voice playback section 16 is constituted as the cassette tape playback section, they may be radio sets, such as other audio regenerators, such as a compact disk and a mini disc, or radio.

[0015]

[Effect of the Invention] Since this invention is making wireless connection of the body section which has the audio playback section and the cellular-phone section in one, and the earphone microphone section as explained above, When the waiting receptacle of a telephone can be performed and a call

moreover arises, listening to music with an audio regenerator Since it considers as the configuration automatically switched to talk mode, a user becomes possible [talking over the telephone by performing the switch to talk mode to a call also in the location which cannot take movement of a crowded electric car etc.]. Moreover, ringing tone does not become others' trouble, without ringing tone being heard by others since it can catch only by a user's earphone. Moreover, the call in handsfree is attained by constituting a microphone from an earphone of a bone conduction mold.

[0016] Moreover, the code which connects both since the body section and the earphone microphone section are connected by wireless is unnecessary, and even when the body section has contained in the bag of network shelving which a user's hand does not reach, and the bag which is hard to take out immediately, it becomes possible to use as a portable telephone, and it becomes possible to raise the user-friendliness of a portable telephone more.

[Translation done.]

JAPANESE

[JP,09-187060,A]

CLAIMS DETAILED DESCRIPTION TECHNICAL FIELD PRIOR ART EFFECT OF THE
INVENTION TECHNICAL PROBLEM MEANS DESCRIPTION OF DRAWINGS DRAWINGS

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PRIOR ART

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EFFECT OF THE INVENTION

[Effect of the Invention] Since this invention is making wireless connection of the body section which has the audio playback section and the cellular-phone section in one, and the earphone microphone section as explained above, When the waiting receptacle of a telephone can be performed and a call moreover arises, listening to music with an audio regenerator Since it considers as the configuration automatically switched to talk mode, a user becomes possible [talking over the telephone by performing the switch to talk mode to a call also in the location which cannot take movement of a crowded electric car etc.]. Moreover, ringing tone does not become others' trouble, without ringing tone being heard by others since it can catch only by a user's earphone. Moreover, the call in handsfree is attained by constituting a microphone from an earphone of a bone conduction mold.

[0016] Moreover, the code which connects both since the body section and the earphone microphone section are connected by wireless is unnecessary, and even when the body section has contained in the bag of network shelving which a user's hand does not reach, and the bag which is hard to take out immediately, it becomes possible to use as a portable telephone, and it becomes possible to raise the user-friendliness of a portable telephone more.

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TECHNICAL PROBLEM

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DESCRIPTION OF DRAWINGS

[Brief Description of the Drawings]

[Drawing 1] It is the appearance perspective view of the operation gestalt which applied the portable telephone of this invention as a cassette tape regenerator.

[Drawing 2] It is the block block diagram of drawing 1.

[Description of Notations]

1 Body Section

2 Earphone Microphone Section

11 Antenna

12 Radiotelephony Section

13 Ringer Tone Detecting Element

14 Antenna

15 Body Side Transceiver Section

16 Voice Playback Section (Audio Playback Section)

17 Control Section

21 Antenna

22 Earphone Microphone Side Transceiver Section

23 Earphone Microphone

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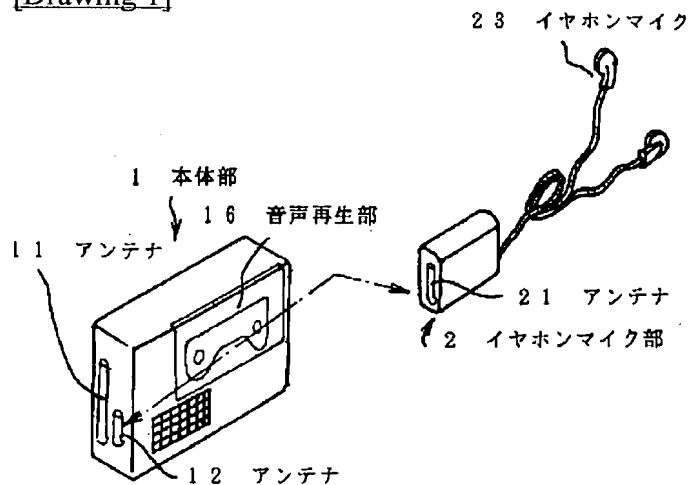
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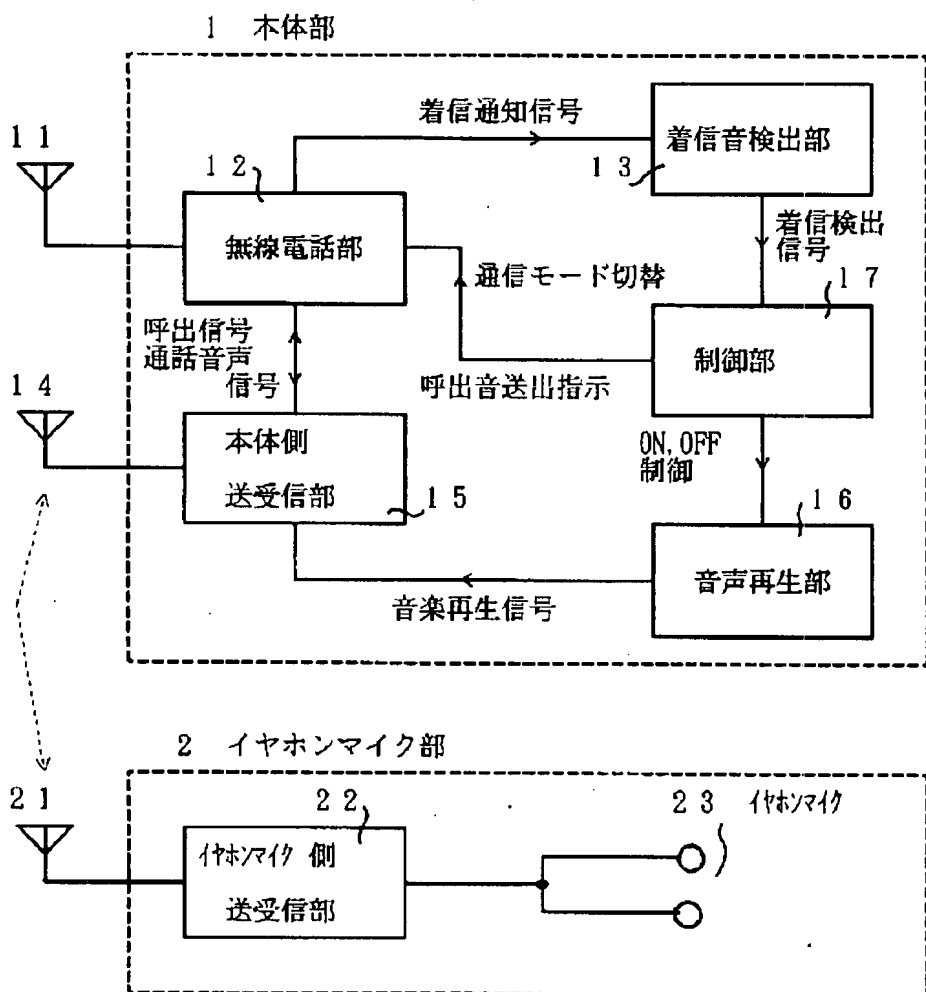
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DRAWINGS

[Drawing 1]



[Drawing 2]



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